

Illinois Commerce Commission
Assessment of Illinois Power Company
1998 Reliability Report For The 1998 Period

Pursuant to 83 Ill. Adm. Code 411.140

December 2000

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1. Executive Summary

Beginning with the year 1999, and at least every three years thereafter, 83 Illinois Administrative Code Part 411.140 requires the Commission to assess the annual reliability report of each jurisdictional entity and evaluate the its reliability performance. This document assesses the annual reliability report filed by Illinois Power Company ("IP") on June 1, 1999, and evaluates its reliability performance.

Assessment of Reliability Report

Illinois Power's first report pursuant to 83 Illinois Administrative Code Part 411 ("Part 411") had a number of short comings. These included misleading statistics due to problems with the company's Trouble Outage Report system and the operation of that system. A major storm on June 29, 1998, caused numerous outages that overwhelmed the Trouble Outage Report system. Illinois Power claims it is working to limit these problems. In addition, Illinois Power may be reporting many tree related outages as weather related outages. The Commission recommends IP to fix these problems on an expedited basis.

Illinois Power's Historical Performance Relative to established Reliability Targets

Part 411.110(b) does not require Illinois Power to collect or provide much of the customer specific reliability data until the 1999 calendar year. Thus the Commission is unable to asses IP's performance compared to the established reliability targets in Part 411.140 (b)(4)(A-C). In addition, the reliability targets specified in Code Part 411.140 (b)(4)(A-C) are for controllable outages only. However, IP did not and was not required to differentiate between controllable and uncontrollable outages for 1998. Therefore, Illinois Power's statistics include both controllable outages and uncontrollable outages. The remainder of this report uses total company outage statistics without regard to controllability.

Table 1 below shows Illinois Power's system wide statistics for 1998 as compared to other Illinois electric utilities.

Table 1

	SAIFI	CAIDI	CAIFI
ComEd	2.20	274	2.63
Illinois Power	2.44	267	2.96
CIPS	0.66	122	N/A
CILCO	2.84	162	N/A
Union Electric	2.23	519	N/A
MidAmerican	2.16	146	2.55

SAIFI: System Average Interruption Frequency Index (say' fee)

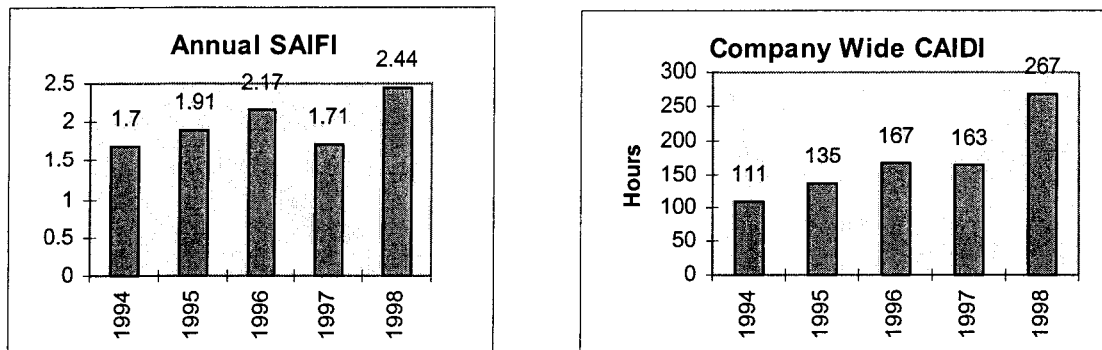
CAIDI: Customer Average Interruption Duration Index (kay' dee)

CAIFI: Customer Average Interruption Frequency Index (kay' fee)

Trends in Illinois Power's Reliability Performance

While the Commission cannot compare IP's reliability performance to established reliability targets, when compared to data from previous years, Illinois Power's reliability performance seems to be trending downward. The charts below show the trend for SAIFI and CAIDI. Increasing values of these statistics translates to reliability becoming worse. The Commission is aware that the data from 1994 through 1997 is not necessarily directly comparable to 1998. However, the Commission believes the data is sufficiently accurate for the purpose of showing trends. With no evidence to the contrary, IP's reliability is downward trending.

Figure 1



Illinois Power's Plan to Maintain or Improve Reliability

IP plans to patrol and trim trees on every circuit on a four year cycle. However, IP admits that some circuits have gone six years without a trim.

IP is installing lightning arrestors and animal guards on all new transformers as well as at existing problem areas. IP inspects oil circuit reclosers each month.¹

The Commission believes this is a good first step to improving the declining reliability in recent years.

Potential Reliability Problems and Risks

IP admits it is behind in tree trimming.² The Commission is concerned that IP has been behind its four year tree trimming schedule since 1995 and is becoming more dilatory as time passes. Illinois power should do whatever is necessary to catch up with the tree trimming cycle.

It appears Illinois Power is replacing its old, 4kV spacer cable only as parts of lines using this type of construction fail. Illinois Power should consider replacement of spacer cable before failures occur.

¹ IP Reliability Report, pp. 13-14

² Id., p.14

Review of Illinois Power's Implementation of its Plan for the Previous Reporting Period

IP claims it has addressed the results of the recommended action regarding worst performing circuits from prior years. IP claims it completed all of its recommended action in the 1998 report with only one exception. The exception was that IP was unable to acquire property to construct a planned substation. IP has now built the substation.

Review of Recommendations

The Commission makes the following recommendations:

- IP should expedite its tree trimming to get back to its policy of a four year trim cycle by the end of the year 2002.
- IP should consider replacing spacer cable before it fails.
- IP should review how it categorizes weather and tree related outages
- IP should use Attachment 1 to report age related data

The Commission Staff has reviewed IP's 1999 report and found that these issues were not specifically addressed.

2. Introduction

Beginning with the year 1999 and at least every three years thereafter, 83 Illinois Administrative Code Part 411.140 requires the Commission to assess the annual reliability reports of each jurisdictional entity and evaluate its reliability performance. Code part 411.140 requires the Commission evaluation to:

- A) Assess the reliability report of each entity.
- B) Assess the jurisdictional entity's historical performance relative to established reliability targets.
- C) Identify trends in the jurisdictional entity's reliability performance.
- D) Evaluate the jurisdictional entity's plan to maintain or improve reliability.
- E) Include specific identification, assessment, and recommendations pertaining to any potential reliability problems and risks that the Commission has identified as a result of its evaluation.
- F) Include a review of the jurisdictional entity's implementation of its plan for the previous reporting period.

This document assesses Illinois Power's 1999 Reliability Report ("Reliability Report") and evaluates Illinois Power's reliability performance for calendar year 1998. The organization of this report follows the above listed requirements.

The utility record keeping requirements in 83 Administrative Code Part 411.110 ("Part 411.110") did not take effect for Illinois Power until January 1, 1999. Part 411.110 requires the utility to, among other things, record and report reliability information at the customer level and to report controllable outages. The outage statistics Illinois Power reported for 1998 were those required by the Part 411 predecessor, Part 410. Since the reporting period in Illinois Power's June 1999 report was calendar year 1998, the rule did not require Illinois Power to report on that data. Illinois Power's June 2000 report should include data that Part 411.100 requires.

3. Assessment of Illinois Power's 1998 Reliability Report

IP serves approximately 577,000 customers in Illinois. IP states that its system consists mainly of rural areas and small towns. About 91% of IP's distribution system is overhead with the remaining 9% being underground conductor.

IP prepared its Reliability Report in compliance with Section 16-125 of the Public Utilities Act and the Commission's transmission and reliability rules as found in Part 411. IP filed a supplemental report in July, 1999 to address non-compliance issues raised by ICC Staff in a letter dated June 17, 1999.

Despite addressing the non-compliance issues raised by Staff, Illinois Power's first report pursuant to new Code Part 411 had a number of short comings. These included misleading statistics due to problems with the company's Trouble Outage System ("TOS"). TOSs are used by utilities to identify and locate outages and to predict what device(s) may have failed. A TOS can also estimate the total number customers that are out on a circuit. This information is used to, among other things, help organize and prioritize restoration work.

On June 29, 1998, customer calls reporting outages due to a major storm overwhelmed the TOS capabilities and caused the computer system to crash several times. In addition, IP claimed that their dispatchers did not have time to verify TOS predictions or that the TOS model matches the actual system. This can cause the TOS to, for example, report several small outages when only one larger outage in fact occurred. Illinois Power claims it is working to limit these problems.

Next, Illinois Power has been calculating the CAIFI statistic wrong for several years. The precise problem IP has with the calculation is unknown to the Commission. However, it appears to be related with the TOS. The result of the miscalculation is to render the CAIFI information useless.

Finally, as discussed further below, Illinois Power may be reporting many tree related outages as weather related outages.

The Commission recommends that IP fix all of the problems with its TOS as soon as possible. IP states that it has upgraded the TOS system already. However, IP did not state whether it had upgraded dispatcher personnel to improve operation of the system.

Part 411.120(b)(3)(G) requires the utilities to report on the age of the their distribution equipment. Illinois Power estimates that its distribution system is about 12.5 years old on average. Service life ranges from 21 years to 60 years. However, each of the reporting utilities used a different format to report the age characteristic of its distribution system. Therefore it is impossible to compare the age of equipment across utilities. The Commission desires to have the information in a comparable format. To that end, the Commission has determined that the table in Attachment 1 will provide the information pertaining to the age of the distribution equipment in a manner that is consistent among all the reporting utilities. Illinois Power should use this form in its reliability report for the year 2000 that will be filed in June 2001.

4. Illinois Power's Historical Performance Relative to Established Reliability Targets

Part 411.140(b)(4)(A-C) establishes reliability targets that jurisdictional utilities must strive to meet. These targets specify a certain number of outages as well as hours of outage that a utility should strive to meet on a per customer basis. However, Part 411.120(b)(3)(K)&(L) does not require the utility to report individual customer outage data until the 2001 reliability report, which will be filed on June 1, 2002. The service reliability targets are listed in Table 2.

Table 2.
SERVICE RELIABILITY TARGETS

Immediate primary source of service operation level	Maximum number of controllable interruptions in each of the last three consecutive years	Maximum hours of total interruption duration due to controllable interruptions in each of the last three years
at 69kV or above	3	9
between 15kV & 69kV	4	12
at 15kV or below	6	18

These reliability targets apply only to controllable outages. A controllable outage, or interruption, is defined in Part 411.20 as:

“an interruption caused or exacerbated in scope and duration by the condition of the facilities, equipment, or premises owned or operated by a jurisdictional entity, or by the action or inaction of persons under a jurisdictional entity's control and that could have been prevented through the use of generally accepted engineering, construction or maintenance practices.”

However, the Commission did not adopt Part 411 until the middle of 1998, and Part 411's requirements are, therefore, not applicable to the first half of 1998. As a consequence, Illinois Power did not have the ability to label interruption causes as controllable or uncontrollable until December of 1998. Therefore, IP was not able to report "[t]he number and causes of controllable interruptions for the annual reporting period" as required in Part 411.120(b)(3)(D). Consequently the Commission cannot assess IP's performance relative to the established reliability targets.

Table 3 below shows Illinois Power's system-wide reliability indices for calendar year 1998 as compared to other Illinois electric utilities. The table shows that Illinois Power was not the most or least reliable electric utility in Illinois during 1998.

The comparison of system-wide reliability indices for Illinois electric utilities should provide valid, useful results, though the reader of this report should keep in mind that each Illinois electric utility has a unique system serving unique customers.

Table 3
ILLINOIS UTILITY RELIABILITY INDICES
CALENDAR YEAR 1998

	SAIFI	CAIDI	CAIFI
ComEd	2.20	274	2.63
Illinois Power	2.44	267	2.96
CIPS	0.66	122	N/A*
CILCO	2.84	162	N/A*
Union Electric	2.23	519	N/A*
MidAmerican	2.16	146	2.55

* Section 411.120(b)(3)(H) did not require the collection of CAIFI statistics for any reporting period commencing before April 1, 1998.

SAIFI: System Average Interruption Frequency Index (say' fee). It represents the number of customer outages divided by total system customers.

CAIDI: Customer Average Interruption Duration Report (ca' dee). It represents, for customers that actually had an interruption, how long, on average, the interruptions lasted.

CAIFI: Customer Average Interruption Frequency Index (ca' fee). It represents the outage frequency for customers that had outages. If this index is much higher than SAIFI, that suggests a subset of customers experiences several outages.

Table 4 below shows the reported causes of the interruptions as a percentage of the total. Noteworthy is the high percentage of interruptions caused by "Weather" and the low percentage of interruptions reportedly caused by "Forestry" (trees). The Commission finds these numbers inconsistent due to the difficulty IP has had in keeping up with tree trimming and is concerned that Illinois Power may be reporting many tree related interruptions under the Weather category. Assuming that many of IP's outages are tree related, IP could make significant improvements in reliability by trimming the trees near the wires.

Table 4
PERCENTAGE BREAKDOWN BY CAUSE

Interruption Cause Category	% of Customer Interruptions	% of Customer Interruption Minutes
Animal Related	7.7	2.5
Intentional	8.0	6.3
Equipment Related	20.2	9.3
Public	4.1	1.9
Transmission & Substation Equipment Related	5.8	2.6
Tree Related	4.7	2.9
Weather	42.4	70.8

Part 411.120 (b)(3)(I)&(J) requires the reporting utility to list its worst performing circuits (subsection I) and then state (subsection J) what corrective actions are planned to improve the circuits performance. Table 5 below shows IP circuits with the highest SAIFI for 1998.

Table 5
CIRCUITS WITH HIGHEST SAIFI
CALENDER YEAR 1998

<u>SERVICE AREA</u>	<u>CIRCUIT</u>	<u>SAIFI</u>	<u>CAIDI (Minutes)</u>	<u>CAIFI</u>
Bloomington	402	7.82	466	6.15
Sparta	935	7.82	117	7.52
Galesburg	144	7.67	802	6.94
Bloomington	342	7.54	265	7.38
Galesburg	175	7.22	668	6.75
Galesburg	117	6.82	567	6.41
Decatur	115	6.62	342	5.76
Mt Vernon	131	6.45	339	6.17
Maryville	368	6.23	245	6.07

Illinois Power reported in its narrative, Attachment 7 to the Reliability Report, a very high number of outages for the above circuits. For example, circuit 402 had 31 outages and circuit 144 has had 83 outages. IP later explained that the number of outages was wrong due to IP's dispatchers lack of time to properly identify the cause of the outage. The result is that IP records a few large outages as several small outages.

As part of its review of IP's reliability report, staff engineers inspected several of IP's worst performing circuits. The inspections allow the Staff to verify that work was performed on the circuits and to see if there are any visible reasons for the poor performance of these